

IN THE CLAIMS

1. (Currently Amended) A mobile device for accelerating functioning of a software application having multi-layer, high overhead protocols, the mobile device comprising:

a first processor operating a software application having a multi-layer protocol that may be partitioned into more complex layers and less complex layers, wherein the first processor is configured to operate the less complex layers;

a high performance processor configured to process voice data when the high performance processor is operating a voice service option, configured to operate one of the more complex layers of the multi-layer protocol for the benefit of the first processor according to a command received from the first processor when the high performance processor is not operating the voice service option, and configured to provide a result of the operation of one of the more complex layers to the first processor; and

a computer-readable medium providing a memory accessible to each of the first processor and the high performance processor for passing commands and data between the first processor and the high performance processor to permit the high performance processor to operate the one of the more complex layers of the multi-layer protocol for the benefit of the first processor.

2. (Previously Amended) The mobile device of claim 1 wherein the first processor operates a multi-layer security protocol.

3. (Previously Amended) The mobile device of claim 1 wherein the high performance processor is configured to operate a mathematical algorithm layer of the multi-layer protocol.

4. (Previously Amended) The mobile device of claim 1 wherein the high performance processor further comprises a digital signal processor.

5. (Previously Amended) The mobile device of claim 4 wherein the digital signal processor is further configured to operate a modular math function.

6. (Previously Amended) The mobile device of claim 5 wherein the digital signal processor is further configured to operate a modular math function comprising an exponentiation function.

7. (Currently Amended) A mobile device for accelerating security protocols, the device comprising:

a multi-layer security protocol having one or more of an encryption algorithm and an authentication algorithm and that may be partitioned into more complex layers and less complex layers;

a computer-readable medium providing a shared memory;

a processor coupled to the shared memory and operating a first portion of a predetermined one of the security protocols forming the less complex layers; and

a high performance processor coupled to the shared memory, processing voice data when the high performance processor is operating a voice service option, and operating a second portion of the predetermined one of the security protocols forming one of the more complex layers for the benefit of the processor via the shared memory when the high performance processor is not operating the voice service option, and configured to provide a result of the operation of one of the more complex layers to the first processor via the shared memory.

8. (Previously Amended) The mobile device of claim 7 wherein the high performance processor operates the second portion of the security protocol in response to a command from the processor and returns an interrupt signal.

9. (Previously Amended) The mobile device of claim 7 wherein the high performance processor operates the second portion of the security protocol on data from the processor.

10. (Previously Amended) The mobile device of claim 9 wherein the high performance processor operates the second portion of the security protocol using a modular math function.

11. (Previously Amended) The mobile device of claim 10 wherein the processor passes the data to the high performance processor via the shared memory, and the high performance processor returns a result from operating the second portion of the security protocol to the processor via the shared memory.

12. (Currently Amended) In a mobile device, a circuit for partitioning a multi-layer security services protocol, the circuit comprising:

a computer-readable medium providing a shared memory;

first and second processor cores coupled to the shared memory, wherein the second processor core processes voice data when the second processor core is operating a voice service option;

a multi-layer security services protocol including more complex layers and less complex layers, and partitioned between each of the first and second processor cores, wherein the first processor core operates the less complex layers and the second processor core operates the more complex layers;

one or more application program interfaces operated by the first processor core for interfacing between the security services protocol and the second processor core via the shared memory; and

a modular math function, forming the one of the more complex layers, operating on the second processor core for the benefit of the first processor core when the second processor core is not operating the voice service option.

13. (Previously Amended) In the mobile device, the circuit of claim 12 wherein the first and second processor cores are coupled together through the shared memory.

14. (Previously Amended) In the mobile device, the circuit of claim 12 wherein the security services protocol further comprises one of an encryption algorithm and an authentication algorithm.

15. (Currently Amended) In a mobile device, a method for accelerating a multi-layer protocol, the method comprising:

partitioning a function of a multi-layer protocol in a first processor;

distributing the function to a second high performance processor via a computer-readable medium providing a memory shared by both the first and second processors;

performing the distributed function in the high performance processor for the benefit of the first processor when the high performance processor is not operating a voice service option, and processing voice data when the high performance processor is operating the voice service option; and

returning a result of the distributed function from the high performance processor to the first processor via the shared memory.

16. (Previously Amended) In the mobile device, the method of claim 15 wherein performing the distributed function further comprises performing the distributed function in response to a command from a first processor.

17. (Previously Amended) In the mobile device, the method of claim 16 wherein the first processor performs the partitioning of the function.

18. (Previously Amended) In the mobile device, the method of claim 15 wherein performing the distributed function further comprises operating an algorithm to perform the function.

19. (Previously Amended) In the mobile device, the method of claim 18 wherein the algorithm is a modular math function.

20. (Previously Amended) In the mobile device, the method of claim 15 wherein the multi-layer protocol is a security protocol.